Remarks

After the foregoing amendment, claims 1 and 36 – 41 are pending, with claims 1 and 36 being the independent claims.

Amendments

Claim 1 has been amended to address the 112 issues identified by the examiner. No new subject matter has been added to the claim. The scope of claim 1 has not been changed. Applicant has added the word "segment" to the word "event" in claim 1. This amendment merely clarifies that the event segment is a temporal in nature and has a start date and an end date. This clarification is supported by the specification at page 14, lines 8 – 9. Applicant believes that these cosmetic amendments to claim 1 do not modify the scope of the claim.

New Claims

New claims 36 and 37 are directed to the data model aspect of the invention. New claims 36 and 37 avoid the "worldline" language of cancelled claim 19, which was also directed to the data model. New dependent claims 38 – 41 have been added to further refine the claimed invention.

The Claimed Data Model Technology

The primary elements of the claimed data model that are not taught by the conventional data models found in the prior art are (1) the chronological nature inherent in each data element; and (2) the link between related data elements in order to correlate the two data elements. These unique aspects of the claimed data model are not found in the prior art.

Rao Reference

Rao teaches a "bottom up" multidimensional data model that partitions atomic data values at the lowest level into several dimensions. Rao defines a dimension as an independent partitioning of the set of all values. (Column 4, lines 40 – 41). Thus, the fundamental organization of data taught by the Rao data model is based on multiple ways to group atomic values, which are defined as the smallest unit of data which continues to have meaning in the physical world. (Column 4, lines 30 – 31).

While the base unit of the data model taught by Rao is the atomic value, the base unit of the claimed data model is referred to as a "data element" in claims 1 and 36. The important difference between the base unit atomic value of Rao and the base unit data element of the claimed invention is

that the atomic value is the smallest unit of data which continues to have meaning in the physical world while the data element is a top-level data structure that includes other data structures (i.e., frames and event segments). Furthermore, the data element also includes quantitative data, which is found in a frame and would be equivalent to the atomic values taught by Rao. Additionally, the data element includes links to other data elements. These links are found in an event segment that provides a start date and an end date.

Thus, in contrast to the "bottom up" model taught by Rao, the claimed data model is a "top down" model that does not rely on organizing data at the atomic level (i.e., the partitioning of atomic values into dimensions as taught by Rao). Instead, the claimed data model and method provides a base unit that is a top level data element that comprises a frame (or multiple frames) and an event segment (or multiple event segments). The frame includes quantitative data – these would be like the atomic values of Rao. The difference between the claimed data model and Rao, importantly, is that the quantitative data in a frame do not define or even influence the organization of the data element in the data model. In contrast, this is required by Rao. Thus, Rao does not teach a base unit that is a top level data element that itself comprises frames that include quantitative data.

Furthermore, Rao does not teach a data model having a base unit that is a top level data element that includes an event segment having a start date and an end date. Rao also does not teach an event segment that includes quantitative data such as the start date and end date that chronologically define the event segment. Additionally, Rao does not teach an event segment that comprises one or more links. Moreover, Rao clearly does not teach that the links in an event segment point to another data element in order to associate the "link source" data element with the "link object" data element.

In short, Rao does not teach the claimed data model. Rao does not teach a data model with a base unit that includes sub-components. To the contrary, Rao teaches that the base unit is the atomic value, which is the smallest unit of data which continues to have meaning in the physical world. Moreover, Rao does not teach a data model with a base unit that includes an event segment that further includes links that associate the data element with other data elements. Rao merely teaches a very specific relational organizational technique. Finally, Rao does not teach the claimed invention because Rao does not teach a top-down data model that uses the top level data element as the base

unit and associates the top level data elements with each other through a plurality of links that are defined by a link model.

A review of Figure 7 in Rao is additionally instructive. First, Rao shows several cells at the bottom level. These cells include atomic data values and are divided into sticks based on what product the data value belongs to. Additionally, the sticks themselves are separated out by year. The various sticks are then collected together into a slab, which represents the atomic data values over time for a particular product. The slabs are shown grouped together into a 3-dimensional block. Rao then describes the groupings in Figure 7 as corresponding to successive levels in a data consolidation path. (Column 6, lines 54 – 57). This description emphasizes the "bottom up" nature of Rao since the path goes from many atomic data values in the cells to successive levels of consolidation.

Because Rao does not teach the claimed data model, Applicant asserts that the pending claims are presently in condition for allowance. Applicant further believes that the updated search will not produce references that teach the unique aspects of the claimed data model and respectfully requests that in such case that a notice of allowance be issued.

Advantages of the Claimed Invention

Significant advantages are provided by the claimed invention that are not offered by conventional data models. Initially, the claimed data model can be employed by owners of vastly different types of content. Notwithstanding any differences in the content of data, however, two independent databases that each employ the claimed data model may be combined into a single database without performing any significant MERGE or JOIN function. This is true because the form of the base unit remains the same across all databases, regardless of the particular content.

For example, a first database may be a collection of information about famous actors and a second database may be a collection of information about governors of California. When combined, a link may be created from an event segment in the governors database that is defined by the start date of 2003 and an end date of 2007, for example. The link points to the data element for Arnold Schwarzenegger in the famous actors database and thereby the two discrete databases have been combined into a single database. An additional link may be created from an event segment including the date range 1967 to 1975 and pointing to the data element for Ronald Reagan in the
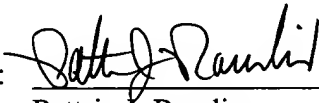
famous actors database. Additionally links may also be provided, but more than one link is not necessary for the two databases to be combined into a single database.

Conclusion

Applicant believes that Rao and the prior art of record do not teach the claimed data model and method of modeling data. Rao teaches a model with a "bottom up" approach to organizing atomic data values while the invention claims a "top down" data model where a data element has an inherent chronological nature and comprises frames with quantitative data and events that are linked between two data elements that both include a common event. Accordingly, Applicant respectfully requests allowance of the pending claims.

Respectfully submitted,
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